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Hello. I'm Dr. Michael Bostwick. I'm a professor of psychiatry at the Mayo Clinic. And I have

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almost unwittingly found myself to be an expert on medical marijuana. So that's what I'll be talking with you about today, and giving you some ideas of the controversies that exist with this substance, which has been so much in the news as of late.

One thing to keep in mind is it really is quite chaotic because we don't have a law of the land when it comes to marijuana. As far as the federal government is concerned, this substance is a Schedule I substance, meaning that it has no medical benefit and therefore should not be used for any medical reason. The law varies from state to state. The implications for the patients, the users, and the providers vary from state to state. And in all cases, from a federal point of view, the substance is illegal.

Where this is really important for us as physicians is that we are, in fact, licensed both locally and at the federal level. We have our state license to practice medicine, but we have our federal license to prescribe. And thus if we, as MDs or DOs, prescribe in the state where we live, we're, in fact, violating the law.

Now, the history of how marijuana came to be a Schedule I substance is interesting as well. It's been used, cannabis and cannabis-related substances, in medicine for millennia. We know that it was used as early as 2500 BC. And it's been used throughout the world ever since.

Perhaps the first modern reference is to India in the 1830s, where it was used for a range of indications that are, in fact, strikingly similar to the many claims that are made for it today. In fact, in the US, it was part of the black bag that doctors carried from about the mid-19th century till the mid-20th century. It was a legal drug in many forms, including poultices, pills, smoked, almost any way you could think of using it. And doctors used it, along with many other herbal preparations, in treating their patients.

Along about the middle of the 20th century, it was recognized that perhaps this drug was dangerous. Some associated it with it being used in certain minority populations. In any case, by 1970, it was declared to have no medical value and essentially put out of circulation officially.

Now, in reality, anyone who knows anything about our history knows that it became a recreational substance that exploded in the '60s and '70s. So that by and large, a huge

proportion of Americans have had some exposure, if not having actually used the drug recreationally. So we have this funny position where people are using it recreationally throughout the nation. It's being grown throughout the nation. It's an easy plant to grow. And yet it's illegal at the federal level and can end up putting the user, or at least the dealer, into jail.

Now, one of the things that fascinates me about this 1970 finding is that it was not based in science. The structure of THC was only discovered in 1964 by Dr. Mechoulam in Israel. And almost nothing was known about how the drug worked on the human organism, let alone specifically for human disease.

In the past four decades, the amount of research has burgeoned. We now know that there are two receptors that are medically important. We know that there's a system called the endocannabinoid system, that spreads throughout the body and is a regulatory system. We know that potentially pharmaceuticals could be developed that could be used for everything, from treating cancer, to treating psychiatric illness.

Unfortunately, with the Schedule I designation, it's become almost impossible to do research on medical marijuana. The federal government controls that research. And the standard in this country is for all of our pharmaceuticals to go through the Federal Drug Administration in order to get approval to be used medically. That's been exceedingly difficult to do.

There is a process. But it's encumbered by the involvement of many agencies because of that Schedule I designation. And as a result, we're really pretty much stagnant, if not at a standstill, with regard to developing pharmaceuticals based on the science we've learned about the endocannabinoid system and cannabis products.

Now, we have and paradoxically had at least two drugs on the formulary since the mid-80s, Marinol and Cesamet, which are based on tetrahydrocannabinol, which is the active ingredient in marijuana. These are early-taken pills. They're used for treating cancer pain and for treating nausea. But there are problems with how they're taken out up the body, that makes them not necessarily very effective for many, if not most, patients.

Smoked marijuana has proven to be much more effective. But there are major issues with taking a drug in the form of smoke. Certainly, the tobacco story is an important connection that might help to explain the marijuana story.

There has been a substance called Sativex, actually a pharmaceutical, that is now legal in many countries in Europe and in Canada. This is a vapor that you spray into the mouth. And it's absorbed through the lining of the mouth. And it gives good relief, with without giving a high in most cases.

I don't see an easy resolution to this problem. With the states running rampage essentially, challenging federalism, and with the federal government not changing its stance, there is no resolution forthcoming to the issues that will challenge us as physicians. While we may recommend medical marijuana carefully, we cannot prescribe it. And as long as there is no ability to do significant research on this drug, the kinds of pharmaceuticals that the endocannabinoid system promises will not be developed. Overall, as I said at the beginning of my remarks, the situation is really quite chaotic, and actually frankly fairly idiotic.

I'm Dr. Michael Bostwick with the Mayo Department of Psychiatry. Thank you for listening.